



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification:</b> <b>G01N 27/49, C12Q 1/00</b>	<b>A3</b>	<b>(11) International Publication Number:</b> <b>WO 00/16089</b> <b>(43) International Publication Date:</b> 23 March 2000 (23.03.2000)
<b>(21) International Application Number:</b> PCT/US99/21683 <b>(22) International Filing Date:</b> 17 September 1999 (17.09.1999) <b>(30) Priority Data:</b> 60/100,730 17 September 1998 (17.09.1998) US <b>(60) Parent Application or Grant</b> CLINICAL MICRO SENSORS, INC. [/]; (). O'CONNOR, Stephen, D. [/]; (). TRECARTIN, Richard, F. ; ().		<b>Published</b>
<b>(54) Title: SIGNAL DETECTION TECHNIQUES FOR THE DETECTION OF ANALYTES</b> <b>(54) Titre: TECHNIQUES DE DETECTION DE SIGNAUX POUR LA DETECTION D'ANALYTES</b>  <b>(57) Abstract</b> <p>The invention relates to the use of signal processing methods in order to achieve higher signal to noise ratios, to increase the detection limits of target analytes. These techniques include the monitoring of the output signal at higher harmonic frequencies.</p> <b>(57) Abrégé</b> <p>Cette invention se rapporte à l'utilisation de procédés de traitement de signaux visant à produire des rapports signal/bruit supérieurs afin d'accroître les limites de détection d'analytes cibles. Ces techniques utilisent la surveillance du signal de sortie à des fréquences harmoniques plus élevées.</p>		

**PCT**

WORLD INTELLECTUAL PROPERTY ORGANIZATION  
International Bureau



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>7</sup> :</b> <b>G01N 27/49, C12Q 1/00</b>		<b>A3</b>	<b>(11) International Publication Number:</b> <b>WO 00/16089</b> <b>(43) International Publication Date:</b> 23 March 2000 (23.03.00)
<b>(21) International Application Number:</b> PCT/US99/21683 <b>(22) International Filing Date:</b> 17 September 1999 (17.09.99)  <b>(30) Priority Data:</b> 60/100,730 17 September 1998 (17.09.98) US  <b>(71) Applicant:</b> CLINICAL MICRO SENSORS, INC. [US/US]; 101 Waverly Drive, Pasadena, CA 91105 (US).  <b>(72) Inventor:</b> O'CONNOR, Stephen, D.; 4222 S. El Molino, #16, Pasadena, CA 91101 (US).  <b>(74) Agents:</b> TRECARTIN, Richard, F. et al.; Flehr Hobbach Test Albritton & Herbert LLP, 4 Embarcadero Center, Suite 3400, San Francisco, CA 94111-4187 (US).		<b>(81) Designated States:</b> AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i>  <b>(88) Date of publication of the international search report:</b> 8 June 2000 (08.06.00)	
<b>(54) Title:</b> SIGNAL DETECTION TECHNIQUES FOR THE DETECTION OF ANALYTES			
<b>(57) Abstract</b>  The invention relates to the use of signal processing methods in order to achieve higher signal to noise ratios, to increase the detection limits of target analytes. These techniques include the monitoring of the output signal at higher harmonic frequencies.			

**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MR	Mauritania	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MN	Mongolia	UA	Ukraine
BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NO	Norway	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	NZ	New Zealand		
CM	Cameroon	KR	Republic of Korea	PL	Poland		
CN	China	KZ	Kazakhstan	PT	Portugal		
CU	Cuba	LC	Saint Lucia	RO	Romania		
CZ	Czech Republic	LI	Liechtenstein	RU	Russian Federation		
DE	Germany	LK	Sri Lanka	SD	Sudan		
DK	Denmark	LR	Liberia	SE	Sweden		
EE	Estonia			SG	Singapore		

# INTERNATIONAL SEARCH REPORT

Int. appl. No.  
PCT/US 99/21683

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 G01N27/49 C12Q1/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 C12Q G01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5 066 372 A (WEETALL HOWARD H) 19 November 1991 (1991-11-19) column 2, line 14 - line 53	1, 10
Y	WO 98 35232 A (NOVALON PHARMACEUTICAL CORP ;UNIV NORTH CAROLINA (US); FOWLKES DAN) 13 August 1998 (1998-08-13) abstract	1, 10
A	D. E. GLOVER: "alternating current polarography in the harmonic multiplex mode" ANALYTICAL CHEMISTRY, vol. 45, no. 11, 1973, pages 1869-1877, XP002133486 abstract	2, 3
	-/-	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"G" document member of the same patent family

Date of the actual completion of the international search

20 March 2000

Date of mailing of the international search report

05/04/2000

Name and mailing address of the ISA

European Patent Office, P.B. 6818 Patenthuis 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Duchatellier, M

## INTERNATIONAL SEARCH REPORT

International Application No.

PCT/US 99/21683

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 650 061 A (KUHR WERNER G ET AL) 22 July 1997 (1997-07-22) abstract	1
A	EP 0 668 502 A (YISSUM RES DEV CO) 23 August 1995 (1995-08-23) abstract	1
A	US 4 882 013 A (TURNER ANTHONY P F ET AL) 21 November 1989 (1989-11-21) abstract	1

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 99/21683

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5066372 A	19-11-1991	US 4963245 A	16-10-1990
WO 9835232 A	13-08-1998	AU 6651798 A	26-08-1998
		EP 0970375 A	12-01-2000
		NO 993764 A	28-09-1999
US 5650061 A	22-07-1997	US 5958215 A	28-09-1999
EP 0668502 A	23-08-1995	JP 7301615 A	14-11-1995
		US 5942388 A	24-08-1999
US 4882013 A	21-11-1989	CA 1254945 A	30-05-1989
		DE 3788292 D	13-01-1994
		DE 3788292 T	19-05-1994
		EP 0234938 A	02-09-1987
		GB 2187203 A, B	03-09-1987
		JP 63011846 A	19-01-1988